Roll No. .....

24434

B. Tech 7th Semester (EE)

Examination – May, 2018

HIGH VOLTAGE ENGINEERING

Paper : EE-442-F

Time : Three Hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Question No. 1 is ***compulsory***. Attempt ***five*** questions in all, selecting ***one*** question from each Section.

1. (a) Define Flashover of Insulator. 2

(b) Define Electric field Intensity. 2

(c) Explain Radio-Interference. 3

(d) Define Ionization and photo Ionization. 3

(e) What are the properties of Impregnated Paper ? 3

(f) Describe, the necessity of extra high voltage transmission. 2

(g) List out the special features of high voltage transformer used in testing-laboratories. 3

(h) Define Townsend's first Ionization constant. 2

SECTION – A

2. (a) Explain Townsend's theory of breakdown of gas. 10

(b) Explain trends observed and followed related to high voltage transmission. 10

3. How conduction of current occurs in liquid dielectrics ? What are the theories of breakdown of liquid dielectric materials ? 20

SECTION – B

4. (a) The Field strength on the surface of sphere of 1 cm radius is equal to 30 Kv/cm. Find charge on sphere (which is supposed to be at its centre) and capacitance of sphere. 10

(b) Derive the condition for the sphere to have zero potential, when a positive charge Q is placed at a distance d from conducting sphere of radius 'a'. 10

5. Explain surface voltage gradient on single Conductor and Bundle Conductor. Also explain its importance in designing of transmission lines. 20

SECTION – C

6. (a) Explain the mechanism of generation of Corona pulses. 12

(b) Write advantages and disadvantages of Corona. 8

7. (a) Discuss the phenomenon of Lightning using Wilson's theory. 10

(b) Explain the following terms : 10

(i) Tower Footing Resistance

(ii) Lightning Arrestor

SECTION – D

8. (a) Discuss about equipments and dimensions used in high voltage laboratory. 10

(b) Describe, how high ac voltages can be generated in the laboratory. 10

9. Explain different methods of measuring high voltage ac and dc. 20
